

Plasmid DNA Associated with Specific Bands in PFGE Patterns of Antibiotic-Resistant *Salmonella* Serotype Enteritidis.

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In this study we sought to determine if specific bands in pulsed-field gel electrophoresis (PFGE) patterns of genome DNA from *S. enteritidis* could be attributed to plasmid DNA. Six plasmid bearing, ampicillin resistant isolates of *S. enteritidis* from patients in Massachusetts were selected from the Centers for Disease Control and Prevention (CDC) National Antimicrobial Resistance Monitoring System (NARMS) database. PFGE of XbaI restricted plasmids demonstrated bands that correlated with similar sized bands on XbaI restricted genomic DNA. Each of the isolates was mated to a plasmid less, nalidixic acid resistant strain of *S. enteritidis*, which had a genomic PFGE banding pattern that was different from each of the ampicillin-resistant parents. After restriction with XbaI, both genomic DNA and plasmid DNA of the transconjugants showed an addition of 1-3 bands in their PFGE pattern which corresponded to bands with similar molecular weights that were present in the ampicillin-resistant parents. This suggests that certain bands in the PFGE of genomic digests can be attributed to plasmid DNA. To confirm this, DNA was transferred by Southern blot from gels with genomic DNA or plasmid DNA, and probed with biotinylated ampicillin-resistance gene (1857bp BstNI fragment of pBR322). The probe did not bind to the DNA of the nalidixic acid-resistant parent. The ampicillin resistance gene probe bound to 5 of 6 of the expected transconjugants in genomic and plasmid digests. In one transconjugant, the probe only bound to plasmid bands. These results demonstrate that certain bands of PFGE genomic DNA can be attributed to plasmid DNA. In addition plasmid analysis and the use of specific gene probes can be used to explain subtle differences in PFGE banding patterns of genomic digests of epidemiologically related isolates and to track the transfer of antibiotic resistance genes.

Suggested citation:

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